Additional Bottom Ash Samples

1. What selection criteria did Duke Energy use to identify Belews Creek and Marshall Steam Station as plants to sample? Are there any other bottom ash data associated with other Duke plants? EPA requests that bottom ash sampling data be provided for all Duke Energy plants for which data are available.

Response:
Samples were collected at the East Bend Generating Station. The sample results are provided in the East Bend Bottom Ash spreadsheet.

2. Please provide the Pond/ Impoundment Unit ID (e.g., SPD-2) for the pond which bottom ash transport water sampled would enter. Please provide the dimensions for this pond including surface area, depth, and residence time. Also, please identify what other wastestreams flow into this impoundment and their relative contributions.

Response:
Refer to the ICR Questionnaire, Question D4-2

Station	Pond Impoundment Unit ID	Surface Area (ft^2)	Depth (ft)	Residence Time (hrs)
East Bend	SPD-1 / Pond 1	2,317,392	36.5	2,965

East Bend (refer to the ICR Questionnaire, Question D3-2)

Wastestream	Flow
Bottom ash sluice water	188 gpm / 24 hpd / 365 dpy
Boiler blowdown	1 gpm / 24 hpd / 365 dpy
Coal pile runoff	105 gpm / 24 hpd / 126 dpy
Filter backwash	27,000 gpd / 52 dpy
Ion exchange wastewater (regeneration waste)	23 gpm / 24 hpd / 365 dpy
Miscellaneous Plant usage	452 gpm / 24 hpd / 362 dpy
Vacuum Filter Pump Seal Water	132 gpm / 24 hpd / 365 dpy
Cooling tower overboard	990 gpm / 24 hpd / 365 dpy
Landfill runoff (uncapped landfill)	119 gpm / 24 hpd / 365 dpy
Sanitary	30 gpm / 24 hpd / 365 dpy
General runoff	30 gpm / 24 hpd / 126 dpy
Floor Drain wastewater	880 gpm / 24 hpd / 365 dpy

3. For each plant, identify what chemicals are added to the wastestream upstream of the sample location or to the sample during settling.

Response:

Station	Chemicals Added
East Bend	No chemicals added for ash sluicing, but bottom ash sluice water system draws from cooling tower circulating water, which is treated with *de minimis*

	concentrations of HEDP, H2SO4, and (summer only) hypochlorite. It is likely none of these would be detectable in the bottom ash sluice water.

4. Please provide a more detailed description of the sampling method beyond "collected in accordance with Method 1669." Please specify the location of the bottom ash transport water sample provided (e.g., directly from bottom ash sluice pipe discharge into commingled pond or upstream prior to this point). Please specify whether the sample was a grab or composite sample. Additionally, provide duration and frequency information for all composite sampling (e.g., 24-hour composite collected every hour).

Response:
The samples were collected in accordance with Method 1669. All samples collected were grab samples while bottom ash was being sluiced. The samples were collected directly from the bottom ash sluice water pipe prior to comingling with other wastewater sources. Pyrites and bottom ash are sluiced together.

5. How often is the bottom ash sluiced at the plant? Please indicate whether samples were collected during periods when the bottom ash is not sluiced (i.e., source water is flowing through the pipe).

All samples were collected while bottom ash sluice water was being discharged.

Refer to the ICR Questionnaire, Question C3-3

Plant	Unit	Average Sluice Water Flow Rate (gpd)	Typical Duration (hpd)	Typical Frequency (dpy)
East Bend	2	300,000	24	257

6. Please identify how long the bottom ash was in contact with the water prior to collecting the supernatant. How does this sample settling time compare to the retention time of the surface impoundment identified in question #2?

Response:
For East Bend, the supernatant was not collected. Instead the entire bottom ash sample was collected and sent to the laboratory for analysis.

7. For each plant, please provide additional details regarding the source water sampling locations:

a. Please specify the location of the source water samples provided. Please indicate whether the plant discharge is upstream or downstream of intake water location (i.e., does any of the plant's effluent contribute to intake water)?

Response:

Plant	Source Water Sample Location	
East Bend	Tap @ the service water intake	Service water intake is on the Ohio River upstream of plant discharges

b. Does the plant treat the intake water prior to use in the bottom ash sluicing system. If so, how is the intake water treated?

Response:

Plant	Bottom Ash Sluice Water Treatment
East Bend	Intake water is screened to remove gross contaminants. Bottom ash sluice water system draws from cooling tower circulating water, which is treated with de minimis concentrations of HEDP, H2SO4, and (summer only) hypochlorite.

c. Does the plant recycle any process wastewater for use in the bottom ash sluicing system. If so, how?

Response:

Plant	Plant Recycle Water
East Bend	No; bottom ash sluice water system draws from cooling tower circulating water, which is process water but not wastewater.

8. For each plant, please provide the associated TSS concentration for the source water and the bottom ash samples.

Response:

Plant	TSS Concentration
East Bend	Intake sample was not analyzed for TSS; NPDES-reported TSS value for the month (Aug. 2011) was 8 mg/l.

9. For each plant, describe any atypical operations occurring at the plant at the time of sampling (e.g., test burn of new coal).

Response:

Plant	Operations
East Bend	Normal operation

10. For each plant, please provide the flow rate of the wastewater at the time of sampling, as well as the average annual bottom ash discharge flow rate.

See response for Question 5 above regarding the average annual bottom ash discharge flow rate.

The flow rate was not measured at the time of sampling.